Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Previously presented) The method of Claim 128, wherein the plurality of first test compounds is selected from first test library using a space-filling technique; and wherein the plurality of second test compounds is selected from the second test library using a space-filling technique.

3. (Previously presented) The method of Claim 128, wherein said step of determining a relationship comprises the step of determining $\hat{y}_i = f(x_{ij})$, where x_{ij} denotes a parameter, i ranges from 1 to n where n represents the number of first culture media in the plurality thereof, j ranges from 1 to d where d represents the number of parameters, and $\hat{y}_i$ represents an estimate of the measured first indicia of the property of the plurality of first culture media.

4. (Original) The method of Claim 3, wherein said step of determining a test requirement comprises the step of determining a range of acceptable indicia of the property.

5. (Previously presented) The method of Claim 4, wherein said identifying step comprises determining from $\hat{y}_i = f(x_{ij})$, estimated indicia of the property

of a plurality of second culture media which each contains a respective test compound; and wherein at least one of the second culture media contains a test compound that is not within the first test library.

6. (Original) The method of Claim 5, wherein said identifying step further comprises:

determining which of the estimated indicia are within the range of acceptable indicia; and

determining from the estimated indicia that are within the range, the plurality of second test compounds from the second test library.

7. (Previously presented) The method of Claim 6, further comprising the step of measuring a second indicia of the property of the plurality of second culture media.

8. (Previously presented) The method of Claim 7, wherein $f(x_{ij})$ is a non-parametric regression formula.

9. (Previously presented) The method of Claim 3, wherein $f(x_{ij})$ is a non-parametric regression formula.

10. (Previously presented) The method of Claim 128, wherein said step of determining a relationship comprises the step of:

determining a distance function $d(x_1, x_2)$ between a first value of a parameter, x_1, of a first test compound and a second value of the parameter, x_2, of a second test compound not within the first test library; and

estimating the indicia of the of the property of a culture medium containing the second test compound as the indicia of the property of the culture medium containing the first test compound if $d(x_1, x_2) \leq d_{cutoff1}$, where $d_{cutoff1}$ is a cutoff distance for the first test compound.

11. (Previously presented) The method of claim 128, wherein said measuring step is preceded by a step of defining a first test library by representing each of a plurality of groups of compound isomers from a compound space as a respective candidate compound.

12. (Original) The method of claim 11, further comprising the step of expanding less than all of the candidate compounds determined in said representing step into their constituent compound isomers using a space-filling technique.

13. (Previously presented) The method of claim 128, wherein the at least one parameter is selected from the group consisting of whole molecule, sequence-specific, and topological parameters.

14. (Previously presented) The method of claim 128, wherein the at least one parameter is a whole molecule parameter.

15. (Original) The method of claim 14, wherein the whole molecule parameter is selected from the group consisting of total charge, molecular weight, isoelectric point, total dipole moment, isotropic surface area, electronic charge index, and hydrophobicity.

16. (Canceled)

17. (Canceled)

18. (Previously presented) The method of claim 128, wherein the first and second test libraries are selected from the group consisting of peptide, polynucleotide, nucleic acid, carbohydrate, free fatty acid, and lipid libraries.

19. (Previously presented) The method of claim 128, wherein the first and second test libraries are test peptide libraries.

20. (Original) The method of claim 19, wherein the first and second test peptide libraries consist of peptides having a length in a range from about four amino acids to about twenty amino acids.

21. (Original) The method of claim 19, wherein the peptides in the first test peptide library comprise at least one amino acid position that is nonvariable or is designated by a limited number of possible amino acids.

22. (Original) The method of claim 19, wherein the peptides in the second test library comprise at least one amino acid position that is nonvariable or is designated by a limited number of possible amino acids.

23. (Original) The method of claim 19, wherein said step of measuring first indicia is preceded by the step of forming a plurality of cell cultures which each contains a respective first culture medium from within the plurality thereof.

24. (Original) The method of claim 23 further comprising the step of conditioning the cell cultures to grow in both chemically-undefined and chemically-defined media prior to said measuring step.

25. (Original) The method of claim 23, wherein the cell cultures are selected from the group consisting of mammalian, insect, plant, fungal, yeast, protozoan and bacterial cell cultures.

26. (Original) The method of claim 23, wherein the plurality of culture media are chemically-defined culture media.

27. (Original) The method of claim 23, wherein the measured property of the plurality of first culture media is the ability to alter the growth, proliferation, maturation or differentiation of cultured cells.

28. (Original) The method of claim 23, wherein the measured property of the plurality of first culture media is the ability to alter peptide or protein production by cultured cells.

29. (Original) The method of claim 28, wherein the peptide or protein is selected from the group consisting of antigens, toxins, antibodies, hormones, growth factors, cytokines, clotting factors, and enzymes.

30. (Original) The method of claim 23, wherein the measured property of the plurality of first culture media is the ability to alter the production of a compound selected from the group consisting of antibiotics, steroids, carbohydrates lipids and nucleic acids by cultured cells.

31. – 127. (Canceled)

128. (Previously presented) A method of identifying a culture medium component, comprising the steps of:

identifying a predetermined set of test compounds;

parameterizing the predetermined set of test compounds by determining at least one parameter for each test compound in the predetermined set of test compounds;

performing a space-filling design of the parameterized predetermined set of test compounds to identify a plurality of first test compounds, wherein the plurality of first test compounds is a subset of the predetermined set of test compounds;

constructing a first test library comprising a plurality of first culture media, each of which contains a respective first test compound;

determining a property, having an indicia, of the plurality of first culture media;

measuring the indicia of the property of the plurality of first culture media;

determining a quantitative relationship between the measured indicia of the property, and at least one parameter of the plurality of first test compounds;

calculating an estimated indicia for a plurality of candidate culture media using the determined quantitative relationship, wherein each candidate culture medium contains

a respective candidate test compound from the predetermined set of test compounds that is not in the first test library;

setting a test requirement having a test indicia range;

selecting a second test library comprising at least one second culture medium, wherein each second culture medium is a candidate culture medium having an estimated indicia that satisfies the test requirement;

measuring the indicia of the property of the at least one second culture medium; and

identifying at least one second culture medium having a measured indicia that satisfies the test requirement.